

Agency-Wide Environmental GIS for NASA: Environmental Information Systems



NASA STENNIS SPACE CENTER ENVIRONMENTAL OFFICE
Hugh Carr, Adam Dunlap, Kelly Boyd, Joy Parikh

NASA ENVIRONMENTAL AND ENERGY CONFERENCE
SEPTEMBER 25, 2008

STENNIS SPACE CENTER: PRINCIPAL CENTER FOR ENVIRONMENTAL GIS (EGIS)



Principal center for support of NASA's Environmental GIS (EGIS) activities

Leading NASA-wide effort to develop baseline GIS for NASA field centers and component facilities - designed to support NASA's Environmental Management Program

Provide uniform datasets to serve as the foundation for environmental applications development



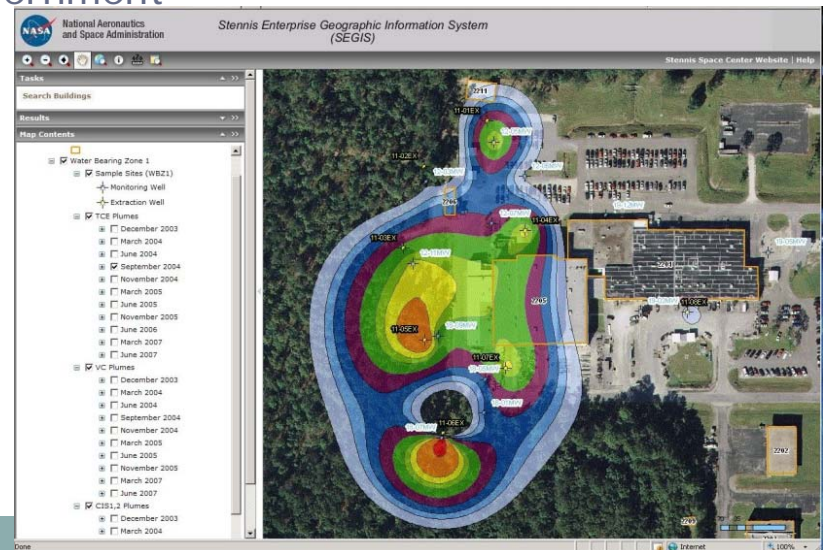
NASA Environmental Management Division



- Mission:
 - Enable environmentally sound mission success
 - Preserve, protect, and enhance natural and cultural resources
 - Eliminate environmental incidents, toxic chemical use, hazardous waste and environmental liability

- Regulatory Drivers:
 - Executive Order 13423 - Strengthening Environment, Energy and Transportation
 - Executive Order 13148 - Greening the Government
 - Clean Air Act
 - Clean Water Act
 - National Historic Preservation Act
 - Endangered Species Act

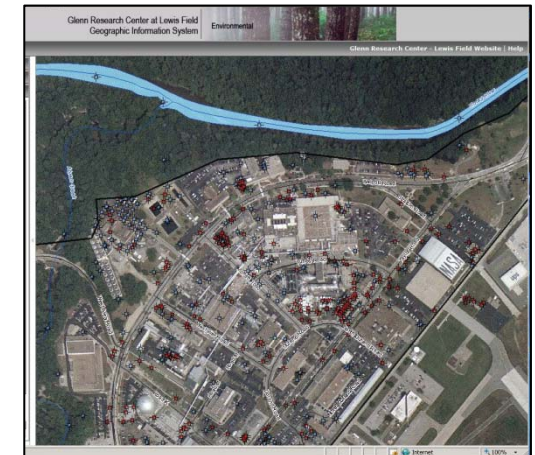
- Regulatory Compliance:
 - NEPA
 - CERCLA/RCRA



Agency-Wide Challenge



- Each center is unique and takes a different approach to meeting EMS requirements
- Size of installations
 - Land: 150 acres to 129,000 acres
 - Population: ~500 to ~12,000 onsite personnel
- Complexity of installations
 - Laboratories, test stands, wind tunnels, hangars
 - Tenant organizations, private enterprises, contractors
- Geographic Variability
 - Rural/Urban/Suburban
 - Desert, Wetlands
- Strong need :
 - Comprehensive approach to Env. Management
 - Tools that allow quick and easy access /display to environmental data



Solution: Agency-wide Environmental GIS (EGIS) Portal



- GIS-Based Internet mapping application that allows users to map, query, store, analyze, model and display environmental data
- Standard application that connects users to Environmental and Facility data
- Effectively visualize and understand Center landscape
- Web-based, no specialized software required, user-friendly



Data Inputs



Real Property Inputs

Real Property Database

- Property Number
- Property Name
- Type of Structure
- Land Area Type
- GSA Usage Code
- Historical Status
- Facility Code
- NASA Classification
- Description
- Site Location
- Book Value
- Easements
- Utilization Level
- Inventory Date
- Land Status

Additional Data Inputs

Remote Sensing/Aerial:

- USGS 1-meter aerial
- USDA NAIP 1-meter aerial
- Landsat

Other Data Providers

- NASA Center Archives
- US Census Bureau
- USGS
- FEMA
- Soil Conservation
- US Fish & Wildlife
- US COE

Deferred Maintenance Report

- Condition Assessment

Env/Facilities Divisions

- Wetland/Floodplains
- CERCLA/RCRA Sites
- T&E Habitat
- Air/Water Emissions
- Historical Sites
- Imagery
- AutoCAD Drawings

Mission Dependency Index

- Core Capability
- MDI Score/Rating

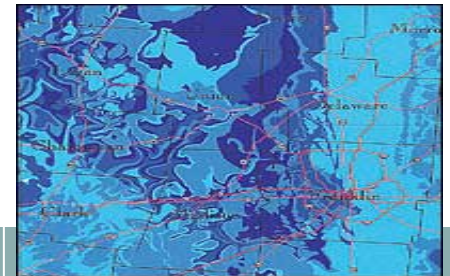
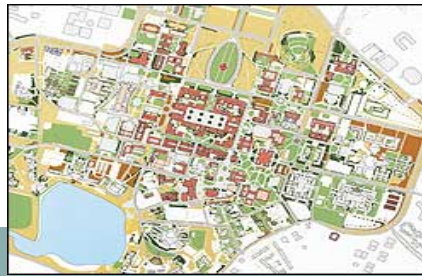
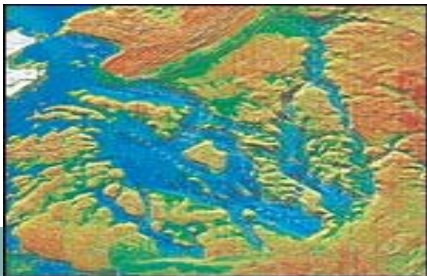
Master Plan NPR 8810

- Built Systems
- Community Setting
- Area Development Plans
- 5 Year Capital Investment Plan
- 20 Year Capital Investment Plan

Environmental GIS Applications



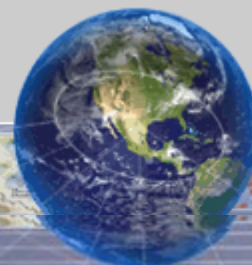
- **Natural Resource Management**
 - Wetlands mitigation
 - Timber management
 - Invasive species control
 - Wildlife management
 - T&E habitat mapping
- **Cultural Resource Management**
 - Historical site preservation
 - Archeological mapping
- **CERCLA Site Remediation**
 - Data archival
 - Groundwater monitoring
 - Plume modeling
- **Emergency Response/Disaster Preparedness**
 - Emergency Environmental Response Tool
- **Environmental Justice**
 - Noise and Vibration
- **Environmental Compliance**
 - Air Emissions Inventory
 - Hazardous Materials Location
 - Spill prevention containment countermeasure
- **Facilities Master Planning**
 - Link to AutoCAD data
 - Floorplan integration
 - Site-wide GPS





**NATIONAL AERONAUTICS
AND SPACE ADMINISTRATION**
John C. Stennis Space Center

- + Visit NASA
- + Visit Destination Earth
- + Visit Stennis Space Center



EGIS PORTAL

Ames Research Center
Dryden Flight Research Center
Glenn Research Center
Glenn Research Center
Plum Brook Station
Goddard Space Flight Center
Jet Propulsion Laboratory
Johnson Space Center
Kennedy Space Center
Langley Research Center
Marshall Space Flight Center
Michoud Assembly Facility
Stennis Space Center
Wallops Flight Facility
White Sands Test Facility



ENVIRONMENTAL GEOGRAPHIC INFORMATION SYSTEM

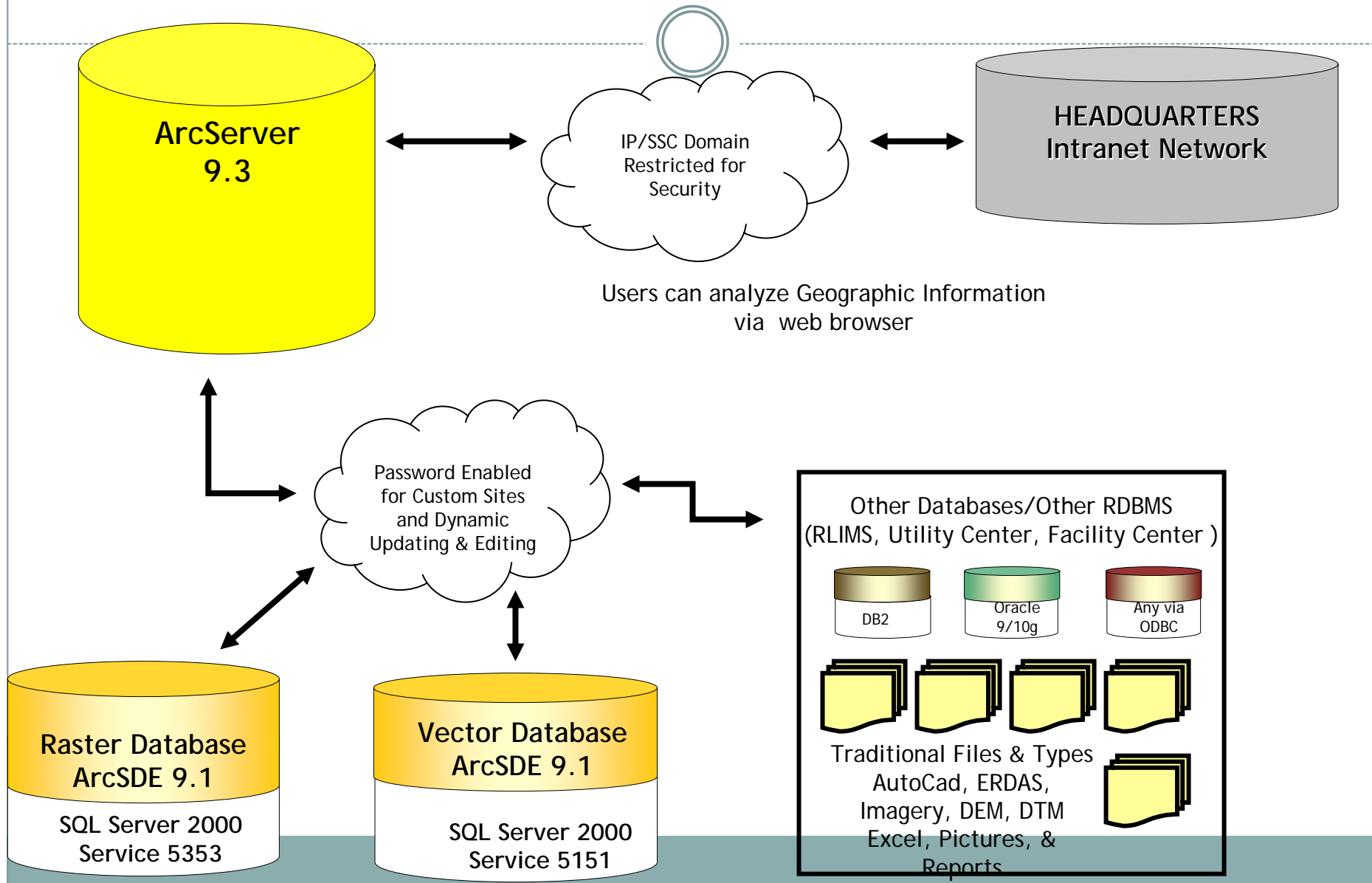


- + Freedom of Information Act
- + The President's Management Agenda
- + FY2001 Agency Performance Report
- + NASA Privacy Statement, Disclaimer,
and Accessibility Certification
- + Freedom to Manage



NASA Official: Hugh Carr
Curator: Doc Smoot
+Contact SSC Environmental
Office

Architecture



Contact



Hugh Carr, Environmental Specialist
NASA Stennis Space Center
Building 1100, Code RA02
Stennis Space Center, MS 39529
Office: 228-688-2466
Email: hugh.v.carr@nasa.gov

Adam Dunlap
Applied Geo Technologies
Building 1100, Code RA02
Stennis Space Center
228-688-1515
adam.b.dunlap@nasa.gov

Joy Parikh
Radiance Technologies, Inc.
1230 Raymond Road, Box 1200
Jackson, MS 39047
601-979-5006
jparikh@radiancetech.com

Kelly Boyd
Applied Geo Technologies
Building 1100, Code RA02
Stennis Space Center, MS 39529
228.688.2603
Kelly.a.boyd@nasa.gov